



AN EXHAUSTIVE STUDY OF THE $M_L=5.7$ EVENT CLOSED TO LORIENT (FRANCE)

J. Guilbert (1), B. Hernandez (1), Y. Mazabraud (4), M. Nicolas (1), Y. Cansi (1),
J.P. Santoire (1), S. Marin (1), M. Granet (3)

(1) Commissariat à l'Energie Atomique, Laboratoire de Detection et de Geophysique, France

(2) Observatoire Oceanologique - Quai de la Darse - BP 48 06235

VILLEFRANCHE-SUR-MER Cedex, France (3) EOST de Strasbourg, 5, rue Rene Descartes,
67084 Strasbourg, France

The seismic event occurred on the 30th Sep. 2002 closed to Lorient (Brittany, France) with a magnitude $M_L=5.7$ (LDG) in a region where no event with $M_L>5$ was ever recorded. This seism was well recorded by the European networks (ReNaSS, BGS, ING, IMP and LDG). We have first fixed the depth using the teleseismic information of the P-pP delay. This information is important and permits to obtain a very good localization because the closest station is at less than 10km toward the epicenter. The focal mechanism obtained using the first motion of the waveforms providing by European networks is a normal fault with a small strike slip component (closed to the rapid determination given by ETH-Zurich and Centroid Moment Tensor Solution by Havard). Using this mechanism, we have compute the synthetic seismograms in the period range [5sec, 30sec] and the comparison with the records shows that it is necessary to include a source complexity as shown the only 63% of CLVD obtained by the SED Moment Tensor Solution. The dispersion of magnitude could also be explain by the source complexity and an inversion of the L_g waves in term of attenuation, moment and stress drop was computed.

At last, a study of the maximum peak of ground acceleration seems to show that this seism does not fit the European scale of acceleration using in seismic hazard.